

# M M Abid Naziri

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## About Me

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PhD Researcher specializing in **Software Testing** for learning-enabled systems. I develop automated testing techniques for Deep Learning Libraries (**PyTorch**, **TensorFlow**) and **Autonomous Driving Systems** in a simulation environment (**CARLA**). I have reported **94** bugs (**74** confirmed) to **PyTorch** and **TensorFlow** to date [\[list\]](#).

## Education

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NC State University, PhD in Computer Science (4th year) May 2027 (Expected)

Advisor: Dr. Marcelo d'Amorim

Award: Graduate Merit Award - Summer 2025

## Research Projects & Publications

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**BugsInDLLs: A Database of Reproducible Bugs in Deep Learning Libraries to Enable Systematic Evaluation of Testing Techniques** [ISSTA 2025](#)

*M M Abid Naziri*, Aman Kumar Singh, Benjamin Wu, Feiran (Alex) Qin, Saikat Dutta, Marcelo d'Amorim

- Developed an open-source dataset **BugsInDLLs** with **112** reproducible bugs across three popular DL libraries: [JAX](#), [Tensorflow](#), and [PyTorch](#).
- Added support for benchmarking other fuzzing tools with an included integration of [FreeFuzz](#).

Venue: [The ACM SIGSOFT International Symposium on Software Testing and Analysis \(ISSTA 2025: Tool Demonstration Track\)](#)  
[\[pdf\]](#)

**Evaluating the Effectiveness of Neurosymbolic Constraint Learning for Testing Deep Learning Library APIs** Submitted

*M M Abid Naziri*, Shinhae Kim, Feiran Qin, Saikat Dutta, Marcelo d'Amorim

- Designed and implemented **Centaur**, a neurosymbolic constraint learning tool for DL APIs to generate valid test inputs.
- Uncovered **23** new bugs in [Tensorflow](#) and [PyTorch](#) (**11** confirmed).

**Testing Autonomous Driving Systems with Focused Misbehavior Forecasting** Submitted

*M M Abid Naziri*, Stefano Carlo Lambertenghi, Andrea Stocco, Marcelo d'Amorim

- Developed **Foresee**, a tool to enhance simulation-based testing of self-driving software by identifying and analyzing near-miss scenarios, improving failure detection efficiency and effectiveness.
- **Foresee** exposes **128%** more failures than state-of-the-art failure predictors.
- **Foresee** also enhances the capability of an existing technique [DriveFuzz](#) by upto **94%**.

**Evaluating the Effectiveness of Coverage-Guided Fuzzing for Testing Deep Learning Library APIs** Submitted

Feiran Qin, *M M Abid Naziri*, Hengyu Ai, Saikat Dutta, Marcelo d'Amorim

- Conducted a study to assess the effectiveness of coverage guided fuzzing to test Deep Learning Library APIs.
  - Reported **42** new bugs in [Tensorflow](#) and [PyTorch](#) (**8** Fixed).
- [\[preprint\]](#)

**Evaluating the Effectiveness of Machine Learning to Improve Deep Learning Library Testing** Submitted

Facundo Molina, *M M Abid Naziri*, Feiran (Alex) Qin, Alessandra Gorla, Marcelo d'Amorim

- Applied ML classifiers to infer the validity of an input before executing to increase efficiency of DL Library fuzzing tools.
- The classifiers achieved an accuracy of **91%** in predicting input validity.
- They also improved an existing fuzzing tool called [ACETest](#) by increasing its validity ratio from **29%** to **61%**.

## Experience

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**Senior Software Engineer**, [Enosis Solutions](#) – Dhaka, Bangladesh

Mar 2019 – Jul 2022

- Developed scalable web applications using Vue JS, TypeScript, and ASP.NET Core, including a project management tool deployed to **270** employees and a Welder Management system
- Developed desktop applications DesignCalcs and ProWrite for pressure vessel design, adding features, fixing bugs, and creating unit/regression tests
- Managed CI/CD pipelines, configured testing servers, and ensured smooth system operations
- Operated in an **Agile** development process in a development team of 7 people
- Mentored new recruits, conducted code/design reviews
- Collaborated with clients and team members via **JIRA**

## Technologies

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**Languages:** Python, R, C#, Delphi, Java, C/C++, JavaScript, TypeScript, Bash

**Technologies:** PyTorch, TensorFlow, CARLA Simulator, Docker, Github Actions, ASP.NET Core, React JS, Vue JS, TestComplete, DUnit